

5 performing the neural-function is expected to be present, the location of the second
6 region being spaced apart from the first region.

1 45. The method of claim 43 wherein:
2 selecting the stimulation site comprises determining a location at which
3 neuroplasticity for implementing the neural-function is expected to occur; and
4 applying an electrical potential comprises placing an electrical pulse
5 across the first and second electrodes without imaging the brain for neural activity
6 related to the neural-function.

1 46. The method of claim 43 wherein selecting the stimulation site
2 comprises determining a location adjacent to the first location of the brain.

1 47. A method of treating a neural-function in a brain of a patient
2 using an apparatus having a support member, a pulse system carried by the support
3 member, and an electrode assembly including first and second electrodes at an interior
4 surface of the support member, comprising:

5 implanting the support member in the patient proximate to a skull of the
6 patient to position the pulse system proximate to the skull and to position the first and
7 second electrodes proximate to a stimulation site on and/or in the brain of the patient;
8 and

9 controlling the pulse system to apply an electrical potential between the
10 first and second electrodes at the stimulation site.

1 48. A method of treating a neural-function in a brain of a patient
2 using an apparatus having a support member, a pulse system carried by the support
3 member, and an electrode assembly including first and second electrodes at an interior
4 surface of the support member, comprising:

5 implanting the support member proximate to a skull of the patient to
6 position the first and second electrodes at least proximate to the pia mater of the brain
7 of the patient at a first cortical location;

8 mechanically biasing the support member and/or the first and second
9 electrodes to resiliently press the first and second electrodes against one of the dura
10 mater or the pia mater of the brain of the patient at the first cortical region; and

11 controlling a pulse generator coupled to the first and second electrodes to
12 apply an electrical potential between the first and second electrodes in the first cortical
13 region of the brain.

1 49. A method of treating a neural-function in a brain of a patient,
2 comprising:

3 selecting a stimulation site in a first cortical region of the brain;

4 determining an electrical stimulation threshold for inducing a response in
5 cells at the stimulation site; and

6 applying an electrical stimulation at an intensity lower than the
7 stimulation threshold between first and second electrodes proximate to the pia mater of
8 the first cortical region of the brain.

1 50. The method of claim 49, further comprising identifying the
2 stimulation site by determining where neural activity has changed in response to a
3 change in the neural-function.

51. The method of claim 50 wherein identifying a stimulation site comprises:

taking a first image of the brain that shows neural activity related to the neural-function using functional MRI;

taking a second image of the brain that shows neural activity related to the neural-function using functional MRI after taking the first image of the brain; and

comparing a change in the neural activity related to the neural-function.

52. The method of claim 50, further comprising applying a peripheral input to the patient that is expected to generate the neural activity in the brain related to performing the neural-function.

53. The method of claim 50, further comprising:
applying a peripheral input to the patient designed to generate the neural
activity in the brain that performs the neural-function; and

identifying a stimulation site comprises taking a first image of the brain that shows neural activity before applying the peripheral input, taking a second image of the brain that shows neural activity while applying the peripheral input, and comparing a change in neural activity in the brain between the first and second images.

54. The method of claim 50 wherein neural activity for the neural-function is expected to occur at the first location in the brain according to a known functional organization of the brain, and wherein identifying the stimulation site comprises detecting neural activity for the neural-function at a second location in the brain different than the first location.